Executive Summary

- In our opinion, fixed income investors subject to taxes, regardless of tax-bracket, should consider the benefits of owning tax-free bonds.
- Municipal fixed income indices have proven resilient in rising interest rate environments compared to taxable counterparts on an after-tax basis.
- Taxes have a negative compounding effect on returns that is not commonly reported and may cause a significant difference between pre-tax and after-tax returns.
- Municipal bonds have exhibited lower credit risk than their taxable counterparts, while providing greater diversification benefits for equity investors. This could prove beneficial in the late stages of the business cycle.

Framing Effects

Municipal bonds are known for their federal tax-exempt status, but how much value does this attribute create? Most investors would respond by referring to the taxable-equivalent yield, which is equal to the municipal yield plus the added tax benefit. This attempts to level the playing field between taxable and tax-exempt options, but these yields only offer a current relative value assessment. Therefore, when demonstrating added value over time, it may be more substantive to adjust taxable returns into after-tax returns, replicating the actual client experience (assuming a taxable account) based upon their unique tax situation. When the results are framed this way investors may realize municipal bonds are not a luxury reserved for top tax-bracket investors, but that tax-exempt securities can benefit investors in lower tax-brackets as well. For this purpose, the following investment examples are exhibited through the lens of an investor who is subject to the current median tax rate of 24%.

Rising Rates

Despite recent changes to the tax code that lowered income taxes for most Americans, individual investors can still reap benefits from holding tax-exempt bonds. Consider the effect of taxes on fixed income portfolios when interest rates rise. Since fixed income distributions are taxed as income, rising interest rates may cause investors to experience losses that are greater than expected due to tax implications. Even though the underlying bond principal loses value, investors still receive income that is subject to taxation. Consider 2013, when interest rates rose quickly. The Bloomberg Barclays U.S. Aggregate Bond Index had a pre-tax total return of -2.02% but the actual client experience in a 24% tax bracket was -2.64% since the income received that year was still subject to taxation. Conversely, since municipal income is not taxed at the federal level, the added income can offset principle loss. To show this, we compared municipal bond performance to that of taxable counterparts on a tax-adjusted basis in rising yield environments dating back to 1998. As displayed in Figure 1, municipal bonds outperform both their aggregate and taxable corporate counterparts under these conditions.

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**Figure 1: Investment Grade performance in rising yield environments**

Source: Rising yield environments methodology
It is worth mentioning that municipal bonds do not always outperform taxable bonds when interest rates rise. A prime example of this is the 2013 calendar year mentioned earlier, as municipal bonds underperformed even on a tax-adjusted basis. This can be attributed to other headwinds in the municipal market at the time, namely credit concerns and the ultimate default of the city of Detroit in this instance. This illustrates that nothing happens in a vacuum, and there are always a variety of outcomes even when the reasoning appears sound.

**Returns**

Another important consideration is the negative compounding effect or drag produced by taxes on portfolios over long periods. Figure 2 shows the tax impact solely from income on taxable bond indices, as well as the performance of comparable municipal bond indices. To show the long term impact of these costs, consider the growth of an initial $10,000 investment over the past decade taxed at the current median tax-rate (24%). For investment grade bonds, we find that on an annualized, after tax basis the Bloomberg Barclays U.S. Aggregate Index returned 3.2%, while the Bloomberg Barclays National Municipal Index and Bloomberg Barclays Corporate Bond Index returned 4.5%. This difference of 1.3% may seem insignificant, but over the 10-year period it resulted in a cumulative return of 37% for the aggregate bond index and a 55% return for municipal and corporate bond indices. The municipal bond index may have had similar returns compared to corporate bonds over this period, but municipal bonds have had much better worst year statistics. During the 2008 calendar year, the investment grade corporate index was down -6.3% while investment grade municipal bonds faced less than half of that loss at -2.5%.

![Figure 2: Tax-Adjusted Growth of $10,000 (Investment Grade)](image)

**Risks**

The unique tax-advantaged characteristics of municipal bonds are not without a unique corresponding risk profile. Municipal-specific risks include illiquidity risks from rare trading, political risk such as budget dysfunction in the case of Illinois from 2015-2017, financial risks from rising underfunded state pension obligations in recent years, and other risks that may differ meaningfully from the taxable bond market. However, investors have historically been compensated for the differentiated risks with stronger credit quality. Figure 3 shows that over the past 30+ years, BBB municipal bonds have had lower default rates than AAA corporate bonds, and high yield municipal bonds have only defaulted 10.37% of the time compared to 25.7% for corporate high yield bonds. This demonstrates a key market inefficiency in municipal bonds—improper ratings likely due to the fragmented nature of the market. There are approximately 50,000 municipal issuers in the $3.9 trillion municipal market, compared to approximately 10,000 issuers and $8.8 trillion in the corporate market, more issuers and smaller dollar amounts translates to smaller bond offerings that garner less attention from rating agencies. The result may be less in depth credit research on municipal deals that leads to opportunity for active managers able to devote more resources to uncover improperly rated deals.

![Figure 3: Default Rates for Municipals (1986) and Corporates (1981)](image)

**Source: S&P Default Study**

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Source: Tax Adjustment Methodology
Another benefit of the differentiated risk profile associated with the municipal market is the low correlation to equity assets, which reduces risk in mixed asset portfolios yet retains competitive after-tax yields. Figure 4 exhibits that the greatest relative opportunity to add equity diversification appears to be in high yield municipal bonds, as high yield muni’s have only a third of the correlation to equities that high yield corporate bonds carry. Investment grade municipals have a similar correlation to the US Aggregate Index but only a fraction of the correlation that investment grade corporates carry, while they have outperformed both indices over longer periods. Municipal bonds have also generated a volatility profile lower than corporate counterparts over that same period, measured by annualized standard deviation, displayed in figure 4.

<table>
<thead>
<tr>
<th>Figure 4: 10-Year Correlation Matrix</th>
<th>Bloomberg Barclays U.S. Agg. Bond Index</th>
<th>Bloomberg Barclays National Muni Index</th>
<th>Bloomberg Barclays Investment Grade Corp Index</th>
<th>Bloomberg Barclays High Yield Corp Index</th>
<th>Bloomberg Barclays High Yield Muni Index</th>
<th>S&amp;P 500 Index</th>
<th>10-Year Annualized Volatility</th>
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<tr>
<td>Bloomberg Barclays U.S. Agg. Bond Index</td>
<td>1.00</td>
<td>0.56</td>
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<td>Bloomberg Barclays High Yield Corp Index</td>
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<tr>
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Source: FactSet. Period: 01/2008 to 12/2017

**Conclusion**

Tax implications may be overlooked for a variety of reasons, but they are an inescapable reality for most investors. We believe investors should consider taxes similar to other costs of investing (ex: management fees, expense ratios, etc.) because, like these costs, taxes have a direct negative impact on performance. If your portfolio is tax-inefficient you may be missing out due to one of the few things market participants can control: costs. The essential takeaway here is that there is an array of beneficial qualities related to municipal bonds, which include interest rate resilience, historically low default rates, and diversification benefits. These factors, in conjunction with their tax-free income should make municipal bonds a consideration for all those subject to taxes. ▲

Sources: FactSet, S&P

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1 Investment grade indices were chosen as the sample due to a lack of data available for high yield indices. The periods were chosen based on peak to trough movements in the 5-year Treasury Note when the Fed actively hiked interest rates over 100bps. Peak to trough movements are a common indicator of rising rate environments, usage of the 2- or 10-year Treasury Note made no meaningful difference to the outcome. After-tax returns were calculated using the 2018 median tax rate for income (24%) applied only to income portion of total return.

2 The after-tax returns were calculated using the 2018 median tax rate for income (24%) applied only to income. Distributions were calculated as total return minus price return on an annual basis for the past 10 years (from 2008-2017), and then past 8 years for high yield comparison. To control for active managers that may or may not make tax-efficient decisions, indices were used. These indices were chosen based on their length of track-record and wide usage. The following indices were used:

- Bloomberg Barclays US Aggregate Bond Index (Bloomberg Barclays US Aggregate Bond Index)
- Bloomberg Barclays US Aggregate Bond Index (Bloomberg Barclays Municipal Bond Index)
- Bloomberg Barclays US Aggregate Credit: Investment Grade Corporate Index (Bloomberg Barclays Investment Grade Corporate Index)
- Bloomberg Barclays US Aggregate Credit: High Yield Corporate Index (Bloomberg Barclays High Yield Corporate Index)
- Bloomberg Barclays Municipal Bond High Yield (Bloomberg Barclays High Yield Muni Index)

3 For municipal defaults, S&P’s study period was Jan. 1, 1986 to Jan. 1, 2018. For corporate defaults, S&P’s study period was Jan. 1, 1981 to Jan. 1, 2018. S&P’s study calculations include all ratings in the C category, from CCC to C.
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